

WHAT IS CLAIMED IS

5

1. A robot remote manipulation system including a bipedal walking robot and a remote manipulation device for remotely manipulating the bipedal walking robot, the robot being connected to  
10 the remote manipulation device via a communication network and controlled by controlling data from the remote manipulation device,

the remote manipulation device comprising:  
a pair of bilateral mechanical rotating  
15 elements each providing a quantity of motion for one of bilateral legs of the bipedal walking robot; and  
a controlling data transmitter for transmitting controlling data corresponding to the quantities of motion to the bipedal walking robot;  
20 and

the bipedal walking robot comprising:  
a controlling data receiver for receiving the controlling data transmitted from the remote manipulation device; and  
25 a leg motion controller for processing the received controlling data and causing the bilateral legs to move forward or backward according to the controlling data.

30

35

2. The robot remote manipulation system  
as claimed in Claim 1,

the bipedal walking robot further

5 comprising:

a sensor for sending environmental  
information;

a force sense data transmitter for  
calculating forces applied to the bilateral legs  
10 based on the environmental information from the  
sensor and transmitting the calculated result to the  
remote manipulation device as force sense data; and

the remote manipulation device further  
comprising:

15 a resistance adjuster for controlling  
motors for rotating each of the bilateral mechanical  
rotating elements, respectively, based on the force  
sense data transmitted from the bipedal walking  
robot, and adjusting resistance of the rotating  
20 motion of the bilateral mechanical rotating elements.

25 3. The robot remote manipulation system  
as claimed in Claim 1, wherein

the sensor comprises an inclination sensor  
for sensing inclination information of the bipedal  
walking robot.

30

35

4. A remote manipulation device for  
remotely manipulating a bipedal walking robot  
connected to the remote manipulation device via a  
5 communication network, comprising:

a pair of bilateral mechanical rotating  
elements each providing a quantity of motion for one  
of bilateral legs of the bipedal walking robot; and

a controlling data transmitter for  
10 transmitting controlling data corresponding to the  
quantities of motion to the bipedal walking robot.

15

5. The robot remote manipulation device  
as claimed in Claim 4, wherein

the controlling data transmitter controls  
the bilateral mechanical rotating elements to adjust  
20 lengths of steps of the bipedal walking robot based  
on the quantities of motion.

25

6. The robot remote manipulation device  
as claimed in Claim 4, wherein

the controlling data transmitter controls  
the bilateral mechanical rotating elements to turn  
30 the bipedal walking robot based on a difference  
between the respective quantities of motion.

35

7. The robot remote manipulation device  
as claimed in Claim 4, further comprising:

5 a resistance adjuster for receiving force  
sense data via a communication network from the  
bipedal walking robot, the force sense data being  
obtained based on information sensed by an  
inclination sensor provided in the bipedal walking  
robot and indicating force applied to the bilateral  
10 legs of the bipedal walking robot, and for  
controlling motors for rotating each of the  
bilateral mechanical rotating elements, respectively,  
based on the force sense data transmitted from the  
bipedal walking robot, and adjusting resistance of  
15 the rotating motion of the bilateral mechanical  
rotating elements.

20

8. The robot remote manipulation device  
as claimed in Claim 4, wherein

the bilateral mechanical rotating elements  
comprise treadmills having rotary belts or rollers.  
25

9. The robot remote manipulation device  
30 as claimed in Claim 4, further comprising:

a display for displaying an image  
transmitted from an imaging device of the bipedal  
walking robot.

35

10. A remote manipulating method in a robot remote manipulation system including a bipedal walking robot and a remote manipulation device for
- 5 remotely manipulating the bipedal walking robot, the robot being connected to the remote manipulation device via a communication network and controlled by controlling data from the remote manipulation device, the method comprising the steps of:
- 10       operating a pair of bilateral mechanical rotating elements in the remote manipulation device, and providing a quantity of motion for each bilateral leg of the bipedal walking robot; and
- transmitting controlling data
- 15 corresponding to the quantities of motion to the bipedal walking robot;
- in the bipedal walking robot, receiving the controlling data transmitted from the remote manipulation device; and
- 20       processing the received controlling data and causing the bilateral legs to move forward or backward according to the controlling data.